MEETING SUMMARY

Hydrogeology Group Meeting on 2003 Monitoring Tasks

New World Mining District Response And Restoration Project
US Geological Survey Conference Room, Helena, Montana
February 18, 2003

The New World Hydrogeology Group met in Helena on February 18, 2003 to discuss surface water and groundwater monitoring activities for 2003 and some of the more far-reaching issues for ultimate compliance with surface water and groundwater standards that were identified during a previous technical meeting held in Bozeman on January 14, and in comments submitted by the State of Montana on the agency review draft of the 2003/2004 Work Plan. Meeting attendants included Mary Beth Marks (USDA FS), Mark Story (USDA FS), David Nimick (USGS), Mike Cannon (USGS), Jim Harris (EPA), Joe Gurrieri (USDA FS), George Furniss (MDEQ), John Koerth (MDEQ), Bill Botsford (MDEQ), Cam Stringer (Maxim), Allan Kirk (Maxim), and Michael Cormier (Maxim). Pete Penoyer, Gary Rosenlieb, and Mary Hektner, all with the National Park Service, joined by phone.

Two handouts were circulated to the group: water quality data from the project database for selected surface water and groundwater stations; and comments submitted by the State of Montana on the agency review draft of the 2003/04 Work Plan. Posters showing surface water and groundwater monitoring locations were used for visual aids. A summary of the meeting discussion follows.

SURFACE WATER MONITORING

DISCUSSION

Maxim presented a summary of surface water monitoring proposed in the agency review draft of the 2003/2004 Work Plan (not itemized here). The main objectives of long-term monitoring are:

- Compliance with Temporary Standards
- Document changes in water quality as a result of response and restoration work

Following this summary was an hour-long discussion of sampling locations and frequency of sampling. There was much discussion about determining background water quality, with several suggestions, including using FCT-12 for Fisher Creek, tributaries that drain Henderson Mountain across from Polar Star Creek, possibly some sites on Daisy Creek, and Polar Star Creek. There are some concerns about using FCT-12 for monitoring background conditions after the Glengarry Adit closure is complete because of the possible affects from the closure on water quality in the FCT-12 drainage. A handout was distributed showing existing water quality data for FCT-12, Lady of the Lake Creek, Fisher Creek seeps and springs, Gold Dust adit, and upstream tributaries in Miller, Fisher and Daisy Creeks.

It was suggested that determining and monitoring background water quality should be added as an objective of monitoring. It was also suggested that a spatial analysis of the data should be done before selecting a site or sites. Joe Gurrieri brought two examples of a spatial analysis of data done by the USGS for the EIS.

There was discussion of why the project is monitoring so many stations in Soda Butte Creek, since there is no District Property in Soda Butte Creek and there is a plethora of historic water quality data. The main reason given for the purpose of monitoring Soda Butte Creek stations was to monitor non-

District Property in Soda Butte Creek. Following several pro and con arguments, it was decided to continue to monitor the stations on Soda Butte Creek as originally proposed in the work plan.

There was also an extended discussion concerning the process required to determine site-specific standards, and how the monitoring program should be adjusted to fill data requirements so that the process could proceed, if necessary, in the event B1 standards cannot be met as the project nears completion. John Koerth said that the site-specific standards process requires documentation of beneficial use and use attainability, is administered by the Board of Environmental Review, appears to be cumbersome and process oriented, and requires the use of EPA guidelines outlined in EPA's Water Quality Handbook.

Additional surface water stations were also proposed for monitoring the McLaren Pit area in conjunction with groundwater monitoring and groundwater data analysis. The DCT tributary stations – 7, -8, -9, and USGS stations - were specifically mentioned. No other changes to the long-term monitoring network were suggested.

ACTION ITEMS – SURFACE WATER

Additional Surface Water Monitoring Stations for 2003

Several stations will be added to the monitoring program for 2003. All stations will be monitored three times, in late April/early May (winter baseflow), late June/early July (high flow), and late September/early October (fall low flow). For stations that are either too difficult to find under snow or that go dry shortly after high flow conditions ebb, the monitoring schedule will be modified so that three sampling events can be completed. These events will be a high flow event (late June/early July) and two low flow events (late July and early August).

The following stations will be added to the list of those to be monitored in 2003:

- FCT-12
- FCT-11-7 (for flow and field parameters only, to be monitored in conjunction with groundwater monitoring in Como Basin)
- Station below the McLaren Millsite (runoff sampling)
- Glengarry Adit discharge
- DCT-7
- DCT-8
- DCT-9
- USGS-1700
- USGS-5519
- SW-5 (Miller Creek)
- All adit discharges in the District

Spatial Analysis

The Forest Service will look at completing a spatial analysis of existing surface water data to select appropriate locations for background monitoring stations. The spatial analysis will be done outside of, but concurrent with, 2003 work plan activities.

GROUNDWATER MONITORING

DISCUSSION

Maxim presented a summary of groundwater monitoring sites proposed in the agency review draft of the 2003/2004 Work Plan (not itemized here). Previous groundwater monitoring completed by the EPA (1996 and '97) and by the USDA Forest Service (1999 through 2002) was done for several reasons including: characterizing chemical nature of groundwater in the different hydro-stratigraphic units present in the District; characterizing groundwater flow in the areas of the McLaren Pit, Como Basin, and Selective Source Repository; and measuring physical characteristics of conductivity and permeability. That work is now completed in the major source areas on District Property. The main objectives for continued long-term groundwater monitoring are the following:

- Measure changes in groundwater quality as a result of response and restoration work.
- Monitor groundwater quality in the Selective Source Repository area.

Most of the two-hour discussion centered on the potential use of a controlled groundwater area as a vehicle to meet groundwater ARARs in the event that water quality does not meet existing standards as the project nears completion. Jim Harris presented some information on controlled groundwater areas that he was familiar with in his work on a site in Bozeman, and mentioned Scott Compton's name with the DNRC in Bozeman as the local contact person that would review any request for a controlled groundwater area. He also said that petitions need to be comprehensive and coordination with DNRC would be pivotal to success. The Technical Impracticability (TI) process for groundwater is an element of the controlled groundwater petition, and David Nimick suggested that we begin drafting a TI to help determine any data gaps. He suggested a draft TI be completed by next year.

There was some discussion on how a boundary for a controlled groundwater area would be drawn, with one suggestion to use the District Property boundary. Another suggestion was to complete a spatial analysis of groundwater and seep data to determine where water quality was impaired. Joe Gurrieri said a similar analysis was done for the EIS using groundwater and seep data, and said he would provide that analysis as a point of beginning.

Mary Hektner with the Park Service mentioned that we should be aware of the controlled groundwater area for the Water Compact agreement for Yellowstone Park, and need to recognize where that boundary is. A suggestion was made to overlay the controlled groundwater area for the Park on the District Property map.

Following some discussion on the existing network of monitoring wells in the District, and the subset of wells that are currently being monitored, the group concurred that, except for the McLaren Pit area, no new wells are needed in the District to monitor groundwater in order to meet the objectives outlined above.

There was a discussion on the reason why we are proposing to install the Meagher Limestone background well upgradient of the McLaren Pit. Installing the well initially arose from a recommendation by the hydrogeology group during a meeting in January 2001, with the objective of characterizing groundwater in an unmined area from the same formation that was mined in the pit. Allan Kirk referenced the data handout that contained water quality information from two other wells that are upgradient of the pit but completed in the Fisher Mountain Intrusive. These two wells are Tracer 2 and EPA-6. Following the discussion, it was decided to proceed with installing the proposed well.

There was discussion about the adequacy of the existing well network below the McLaren Pit, and general agreement that several new bedrock wells, located on either side of the Crown Butte Fault, would be helpful in determining the role of the fault in the movement of metals from the pit to Daisy Creek.

On the issue of sampling the wells for chemical analysis, the one-time event scheduled for July (high water level) was determined to be adequate. David Nimick suggested that during the biweekly sampling of the McLaren wells, if there is a dramatic change in field parameter measurements from the chemical event, we should submit samples for metals and major ions from the wells to determine changes in potential loading.

For the Como Basin, the only suggested change was to monitor FCT-11-7 for flow and field parameters in conjunction with water level measurements of Como Basin wells.

Finally, there was a discussion about field parameters, and whether redox and dissolved oxygen (DO) should be added to the parameter list. Pete Penoyer suggested looking into renting a multi-probe that could take simultaneous readings of pH, SC, redox, and DO, or consider using a flow-through cell to obtain DO data. Some suggested that redox and DO are complimentary measurements, and that redox might be sufficient. Maxim said they would look into the availability and cost of a multi-probe.

ACTION ITEMS – GROUNDWATER

Additional Groundwater Monitoring Stations for 2003

It was decided to drill a total of three new wells: a new shallow/bedrock well pair south of DCGW-104 and east of the fault; one bedrock well west of the Crown Butte Fault near DCGW-131 and –132.

Spatial Analysis

The Forest Service will look at completing a spatial analysis of existing groundwater data so that the body of data can be more easily viewed in the context of District groundwater quality. The spatial analysis will be done outside of, but concurrent with, 2003 work plan activities.